

In re Patent Application of
SERGIO ET AL.
Serial No. **09/994,384**
Filed: **NOVEMBER 26, 2001**

REMARKS

Applicants thank the Examiner for the careful and thorough examination of the present application, for correctly withdrawing the prior indefiniteness rejections, and for extending all courtesies during telephonic interviews of January 13 and 28, 2009, the results of which are detailed below.

Applicants have amended independent Claims 8, 11, 15, 19, and 22 to more clearly define the claimed invention over the prior art. Applicants have also amended dependent Claims 9, 13, 18, 20, and 23 for consistency.

Applicants submit that all claims are patentable, and present arguments and amendments herein supporting such patentability.

I. The Amended Claims

Amended independent Claim 8, for example, is directed to a method of reading a capacitive pressure sensor comprising an array of pressure-sensing capacitors ordered in rows and columns functionally connected through row lines and through column lines substantially orthogonal to each other, using a biasing and reading circuit comprising column and row selectors, and a charge amplifier outputting a voltage of the pressure based capacitance of a selected pressure-sensing capacitor of the array. The method includes resetting an output voltage of the charge amplifier, and connecting nonselected row and column lines of the array to a reference voltage while connecting one

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of an auxiliary capacitor and the selected pressure-sensing capacitor to an input of the amplifier while connecting the other one of the auxiliary capacitor and the selected pressure-sensing capacitor to define a feedback capacitor of the amplifier. The method further includes applying a step voltage on the one of the auxiliary capacitor and the selected pressure-sensing capacitor that is connected to the input of the amplifier and reading the output voltage at steady-state. Independent Claim 8 has been amended to recite a capacitive pressure sensor comprising an array of pressure-sensing capacitors. Support for this claim amendment is found in paragraph 35 of the present application.

Amended independent Claim 11, for example, is directed to a related method of reading a capacitive pressure sensor, and has been amended similarly to Claim 8. Amended independent Claim 15 is directed to a related system for reading a capacitive pressure sensor, and has been amended similarly to Claim 8. Amended independent Claim 19 is directed to a related integrated circuit for reading a capacitive pressure sensor, and has been amended similarly to Claim 8. Amended independent Claim 22 is directed to a combination capacitive pressure sensor device similar to Claim 19, and has been amended similarly.

II. The Amended Claims Are Patentable

The Examiner rejected amended independent Claims 8, 11, 15, 19, and 22 over Smisko in view of Zhang and further in view of Nair et al. As depicted in Figure 3 of Smisko, a photodiode read circuit is disclosed. The circuit comprises a plurality of photodiodes 108 coupled respectively to photodiode readout capacitors C1-N 114. Each photodiode is coupled to the charge amplifier circuit 85 by way of a transfer switch 116. The charge amplifier comprises an operational amp 123. The transfer switch is coupled to the inverting input 198 of the operational amp. The charge amplifier also includes a feedback capacitor 122 coupled between the output 197 of the operational amplifier and the inverting input with a reset switch 199 connected in parallel.

The Examiner correctly notes that Smisko fails to disclose an array of capacitors ordered in rows and columns functionally connected through row lines and through column lines substantially orthogonal to each other, and using a biasing and reading circuit comprising column and row selectors, as recited in amended independent Claim 8, for example. The Examiner looks to Zhang to supply this deficiency. Zhang discloses a CMOS imaging array including a rectangular matrix of pixels. (Col. 2, lines 30-37). The Examiner's stated motivation to combine the row-column arrangement and selectors from Zhang into the linear scanner of Smisko is to provide an

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image having a higher number of pixels compared to the linear scanner to generate an image of better quality.

The Examiner now correctly notes that Smisko and Zhang both fail to disclose capacitive sensors and looks to Nair et al. for this deficiency. The Examiner cited to the Background of Invention Section of the Nair et al. patent, which discloses a Charge Coupled Device (CCD) image sensor with capacitive sensors arranged in a grid pattern. The disclosure of Nair et al. relates to image characterization. The Examiner's stated motivation to combine the CCD image sensor from Nair et al. into Smisko and Zhang is to "determine the optimal placement locations for sensors in a given area." (11-28-2008: Official Action Page 6).

Applicants have amended independent Claim 8, for example, to recite "pressure-sensing capacitors." During the telephonic interviews, the Examiner correctly noted that none of the cited references discloses or fairly suggests this advantageous feature of the claimed invention. Indeed, the cited references all disclose light sensing technology and not pressure-sensing capacitors, as in independent Claim 8, for example. See, e.g., Smisko at Col. 1, lines 5-11; Zhang at Col. 2, lines 30-37; and Nair et al. at Col. 5, lines 5-18. Furthermore, Applicants submit that the person of ordinary skill in the art would be taught away from combining the light sensing teachings of the applied prior art in any pressure-sensing capacitive array.

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Therefore, because of the noted critical deficiency of the prior art, amended independent Claim 8 is patentable over the prior art. Amended independent Claims 11, 15, 19, and 22 are similar to Claim 8 and are also patentable for similar reasons. Their respective dependent claims, which recite yet further distinguishing features, are also patentable over the prior art and require no further discussion herein.

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CONCLUSIONS

In view of the amendments to the claims and the arguments presented above, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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